

WE CLAIM:

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1. A needle protective device comprising:
a needle guard slidably mounted on a needle having a sharpened distal end, said needle guard having a proximal end and a distal end, said needle guard containing a movable needle trap that is biased toward said needle, said needle trap entrapping said sharpened distal end of said needle when said distal end of said needle guard moves near said sharpened distal end of said needle;
and
limiting means for limiting the forward movement of said needle guard along said needle.
2. The device of claim 1 wherein said needle trap is integral to said needle guard.
3. The device of claim 1 wherein said needle trap is inherently biased toward said needle.
4. The device of claim 1 further comprising biasing means for urging said needle guard forward toward said sharpened distal end of said needle.
5. The device of claim 4 further comprising retaining means for releasably retaining said needle guard near ^athe base of said needle.

6. The device of claim 5 further comprising triggering means for releasing said retaining means.

7. The device of claim 4 wherein said biasing means comprises a resilient member having a proximal end and a distal end.

8. The device of claim ⁷4 wherein ^athe base of said needle is coupled to a housing having a forward end, said needle extending axially from said forward end of said housing.

9. The device of claim 8 wherein said resilient member is disposed between said housing and said needle guard.

10. The device of claim 9 wherein said resilient member comprises a coil spring.

Sup B11 11. The device of claim 5 wherein said retaining means comprises a latching arm having a proximal end and a distal end, said proximal end of said latching arm hingedly attached to said housing, said distal end of said latching arm comprising a protrusion.

12. The device of claim 11 wherein said needle guard includes a recess for receiving said protrusion.

13. The device of claim 11 wherein said latching arm further comprises a finger pad for manually disengaging said latching arm from said needle guard.

14. The device of claim 11 wherein said latching arm comprises a ramp for biasing said latching arm in an outward manner when a compressive force is applied to said needle guard.

15. The device of claim 9 wherein said forward end of said housing comprises an opening, the base of said needle being secured within said opening.

16. The device of claim 15 wherein said housing comprises a longitudinal wall section extending forward from said housing, said wall section substantially surrounding said opening.

17. The device of claim 16 wherein said wall section comprises at least one aperture for providing access to said opening.

Sub B2
18. The device of claim 16 wherein said retaining means comprises a latching arm having a proximal end and a distal end, said proximal end of said latching arm hingedly attached to said wall section of said hub, said distal end of said latching arm comprising a protrusion, said needle guard including a recess for receiving said protrusion.

19. The device of claim 18 wherein said triggering means comprises a finger pad positioned on said latching arm for manually disengaging said latching arm from said needle guard.

20. The device of claim 18 wherein said triggering means comprises a ramp positioned on said latching arm for biasing said latching arm in an outward manner when a rearward force is applied to said needle guard.

21. The device of claim 8 further comprising a needle guard hub coupled to said housing, said hub having a longitudinal wall section extending forward from said hub, said resilient member disposed between said hub and said needle guard.

22. The device of claim 21 wherein said wall section comprises an aperture for accessing said needle.

Sub B3
23. The device of claim 21 wherein said retaining means comprises a latching arm having a proximal end and a distal end, said proximal end of said latching arm hingedly attached to said wall section of said hub, said distal end of said latching arm comprising a protrusion, said needle guard having a recess for receiving said protrusion..

24. The device of claim 23 wherein said triggering means comprises a finger pad on said latching arm for manually disengaging said latching arm from said needle guard.

25. The device of claim 23 wherein said triggering means comprises a ramp for biasing said ~~latching~~ arm in an outward manner when a rearward force is applied to said ~~needle guard~~.

26. The assembly of claim 7 wherein said needle guard comprises a first notch for retaining said distal end of said resilient member.

27. The assembly of claim 26 wherein said needle trap comprises a lead-in section having a second notch, said lead-in section locating said resilient member within first and second notches, said second notch releasably retaining said distal end of said resilient member.

28. The assembly of claim 26 wherein said needle trap comprises a lead-in section having a multilevel landing, said lead-in section locating said resilient member within said first notch and said landing, said landing releasably retaining said distal end of said resilient member.

29. The assembly of claim 7 wherein said needle trap comprises at least one longitudinal channel for reducing the contact surface area between said needle trap and said resilient member.

30. The assembly of claim 8 wherein said limiting means comprises a tether having a first end and a second end, said first end

attached to said housing, said second end attached to said needle guard.

31. The assembly of claim 21 wherein said limiting means comprises a tether having a first end and a second end, said first end attached to said hub, said second end attached to said needle guard.

32. The assembly of claim 30 or 31 wherein said tether is flexible.

33. The assembly of claim 8 wherein said limiting means comprises a rigid tether and said housing includes an aperture for receiving said rigid tether, said rigid tether having a first end and a second end, said first end having a stop to prevent said first end of said rigid tether from advancing through said housing aperture, said second end attached to said needle guard.

34. The assembly of claim 21 wherein said limiting means comprises a rigid tether and said hub includes an aperture for receiving said rigid tether, said rigid tether having a first end and a second end, said first end having a stop to prevent said first end of said rigid tether from advancing through said hub aperture, said second end attached to said needle guard.

35. The assembly of claim 32 wherein said hub includes a pocket for storing said flexible tether.

36. The assembly of claim 1 wherein said needle includes a change in contour near the sharpened distal end of said needle, said change in contour providing the limiting means to limit the forward movement of said needle guard along said needle.

37. The assembly of claim 8 wherein said housing comprises at least one projection for removably attaching a protective storage cover to said housing.

38. The assembly of claim 21 wherein said hub comprises at least one projection for removably attaching a protective storage cover to said hub.

39. The assembly of claim 1 wherein said needle guard is side-loadable onto said needle.

40. The assembly of claim 1 wherein said needle guard comprises a first section and a second section, said first and second sections having attachable mating faces.

41. The assembly of claim 40 wherein said needle guard comprises an integral configuration whereby said first and second sections are joined by a hinge section.

42. The assembly of claim 39 wherein said needle guard includes a longitudinal recess for receiving said needle.

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43. The assembly of claim 7 further comprising a shroud for containing said resilient member and said needle guard.

44. The assembly of claim 46 wherein said shroud comprises a collapsible bellows.

45. The assembly of claim 7 further comprising a shroud for containing said needle guard and said needle when the sharpened distal end of said needle is contained within said needle guard, said shroud comprising a bellows, said bellows providing the limiting means to limit the forward movement of said needle guard along said needle.

46. An intravenous catheter assembly comprising:
a catheter hub comprising a proximal end and a distal end;
a needle having a proximal end and a sharpened distal end;
a needle guard slidably mounted on said needle, said needle guard having a proximal end and a distal end, said needle guard containing a movable needle trap that is urged toward said needle, said needle trap entrapping said sharpened distal end of said needle when said distal end of said needle guard moves forward of said sharpened distal end of said needle, said needle guard releasably coupled to said proximal end of said catheter hub;
limiting means for limiting the axial movement of said needle guard;
and

a hub comprising a needle nest for receiving the proximal end of said needle.

55. The assembly of claim 54 further comprising a resilient member having a proximal end and a distal end, said proximal end of said resilient member being retained on said collar.

56. The assembly of claim 51 wherein said needle guard comprises a first notch for retaining said distal end of said resilient member.

57. The assembly of claim 56 wherein said needle trap comprises a lead-in section having a second notch, said lead-in section locating said resilient member within first and second notches, said second notch releasably retaining said distal end of said resilient member.

58. The assembly of claim 50 wherein said needle trap comprises at least one longitudinal channel for reducing the contact surface area between said needle trap and said resilient member.

59. The assembly of claim 49 wherein said needle tip guard comprises at least one skirt.

60. The assembly of claim 46 wherein said needle guard includes a finger post for advancing said needle guard along said needle.

61. The assembly of claim 46 wherein said proximal end of said catheter hub includes a recess.

62. The assembly of claim 61 wherein said needle guard is releasably coupled to said catheter by a male section comprising an arm having a proximal end and a distal end, said proximal end of said arm attached to said needle trap, said distal end of said arm having a projection, said projection being received within said recess of said catheter hub to couple said needle guard with said catheter hub.

63. The assembly of claim 46 wherein said proximal end of said catheter hub includes a projection.

64. The assembly of claim 63 wherein said needle guard is releasably coupled to said catheter by a male section comprising an arm having a proximal end and a distal end, said proximal end of said arm attached to said needle trap, said distal end of said arm having a recess, said projection of said catheter hub being received within said recess of said arm to couple said needle guard with said catheter hub.

65. The assembly of claim 46 wherein said needle guard includes at least one internal guide section to maintain said needle and said needle guard in sliding alignment.

66. The assembly of claim 46 wherein said limiting means comprises a tether having a first end and a second end, said first end attached to said hub, said second end attached to said needle guard.

67. The assembly of claim 62 wherein said tether is flexible.

68. The assembly of claim 46 wherein said limiting means comprises a rigid tether and said hub includes an aperture and for receiving said rigid tether, said rigid tether having a first end and a second end, said first end having a stop to prevent said first end of said rigid tether from advancing through said hub aperture, said second end attached to said needle guard.

69. The assembly of claim 46 wherein said needle guard is side-loadable onto said needle.

70. The assembly of claim 52 wherein said collar is side-loadable onto said needle.

71. The assembly of claim 67 wherein said hub includes a pocket for storing said flexible tether.

72. The assembly of claim 50 wherein said needle trap comprises a lead-in section that is followed by a multilevel landing, said lead-in area locating said spring within first notch and said landing, said landing releasably retaining said distal end of said resilient member.

73. The assembly of claim 46 wherein said needle includes a change in contour near the sharpened distal end of said needle, said

change in contour providing the limiting means to limit the axial movement of said needle guard along said needle.

74. The assembly of claim 46 wherein said hub comprises at least one projection for removably attaching a protective storage cover to said hub.

75. The assembly of claim 46 wherein said hub includes a flashback chamber, said needle in fluid communication with said flashback chamber.

76. The assembly of claim 46 wherein said hub comprises a proximal end and a distal end, said hub including a longitudinal wall section at said distal end of said hub, said wall section substantially surrounding said needle nest.

77. The assembly of claim 76 wherein said wall section comprises at least one aperture for providing access to said needle nest.

78. The assembly of claim 46 wherein said needle guard comprises a first section and a second section, said first and second sections having attachable mating faces.

79. The assembly of claim 46 wherein said needle guard comprises an integral configuration whereby said first and second sections are joined by a hinge section.

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80. The assembly of claim 46 wherein said needle guard includes a longitudinal recess for receiving said needle.

81. The assembly of claim 46 further comprising a resilient member that is disposed between said hub and said needle guard, said resilient member urging said needle guard toward said sharpened distal end of said needle.

82. The assembly of claim 81 wherein said resilient member comprises a proximal end and a distal end.

83. The assembly of claim 82 wherein said resilient member comprises a coil spring.

84. The assembly of claim 81 wherein said needle guard comprises a first notch for retaining said distal end of said resilient member.

85. The assembly of claim 84 wherein said needle trap comprises a lead-in section having a second notch, said lead-in area locating said resilient member within first and second notches, said second notch releasably retaining said distal end of said resilient member.

93. The assembly of claim 92 wherein said bellows provides the limiting means to limit the axial movement of said needle guard along said needle.

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